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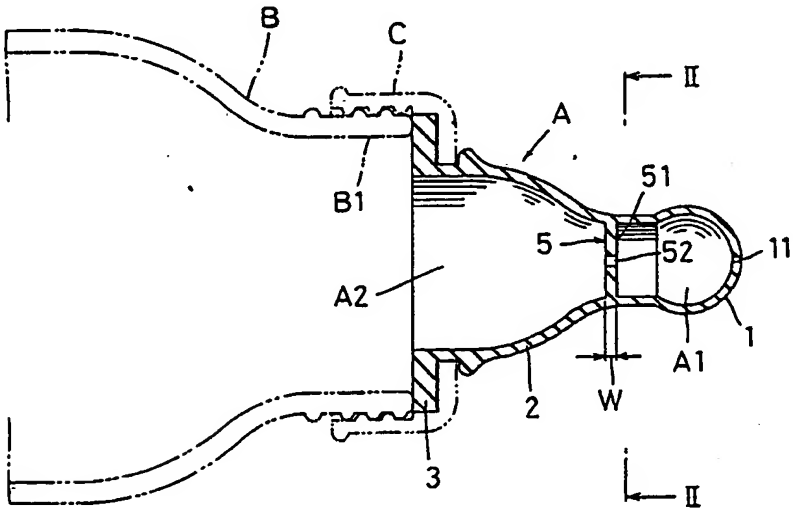
(54) Nipple for a nursing bottle.

(57) A check valve (5) for stopping the circulation of the drinks by compressing a predetermined range on the side of the top of a nipple (A) and allow the circulation of the drinks by releasing the compression is provided inside of the nipple.

A baby can drink the drinks by not suction but chewing type muscle action. Consequently, it is possible to facilitate the development of the masticatory system of the baby.

Fig. 1



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Nipple For a Nursing Bottle

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a new nipple for a nursing bottle through which a baby can take milk with a chewing type muscle action.

Description of the Prior Art

In recent years, cases of temporomandibular joint disorder, malocclusion, periodontitis and other dental diseases have been increased in young people and children. It is considered that this is caused by an insufficient development of the human masticatory system. Thus, the infants of today are inferior in masticatory ability to infants of former days.

It seems that there are three stages in the initial development of the masticatory system. The first stage corresponds to a period during which the basic muscle force of masticatory system is obtained, at the same time, the pattern of chewing movement is acquired.

Recently, it has been presumed that the problem arises in this period with respect to bottle fed infants. More specifically, the bottle fed infants are inferior in chewing and swallowing abilities to breast fed infants. In addition, the infants tend to be inferior in masticatory ability. Therefore, it is presumed that the difference in masticatory ability appeared in the first stage.

Meanwhile, artificial milk is given to a baby from a nursing bottle through a nipple made of rubber taking the external form similar to the breast. In a conventional nipple, a hollow body portion 83 is formed between a hemispherical papilla portion 80 provided with a milk sucking hole 81 and a flange-shaped connecting portion 82 connected to a neck portion of the nursing bottle, as shown in Fig. 3. The baby can take the milk in the nursing bottle through the sucking hole 81 by performing a sucking operation with the above papilla portion 80 being kept in its mouth. More specifically, the baby can take the milk by entirely performing the sucking operation.

As a result of the investigation, the inventor of the present application has found that the masticatory system of bottle fed infants are not sufficiently developed because a chewing operation is not required to take artificial milk. On the other hand, he has found that the masticatory system of breast fed infants are satisfactorily developed because chewing type muscle action is required to take mother's milk.

SUMMARY OF THE INVENTION

The object of the present invention is to provide a nipple for a nursing bottle through which a bottle fed baby can take drinks by not a sucking operation but by a chewing type muscle action so that the masticatory system of the baby should be satisfactorily developed.

The above described object is achieved by providing a nipple for a nursing bottle such as follows: A nipple comprises a connecting portion connected to a neck portion of the nursing bottle, a hollow body portion which is contiguous to the connecting portion, a papilla portion which is contiguous to the body portion, a dispensing hole through which drinks are sended out from the papilla portion, and a check valve provided inside of the body portion for stopping the circulation of the drinks by compressing the body portion and/or the papilla portion, and allow the circulation of the drinks with the compression of the body portion and/or the papilla portion being released.

It is desirable that the above described check valve comprises a diaphragm for partitioning the inside of the body portion and a slit formed in the diaphragm. In this case, it is desirable that the diaphragm has a spherical shape. In addition, it is desirable that flat sidewalls opposed to each other are formed in the papilla portion and/or the body portion, and the slit is formed in parallel with the above flat sidewalls.

The nipple may comprise an outer member and an inner member removably fitted to the inside of the outer member, and the check valve may be formed in the inner member. In this case, it is desirable that a spherical concave portion is formed on the inner periphery of the outer member and a spherical convex portion fitted to the above convex portion is formed on the outer periphery of the inner member.

According to the nipple for a nursing bottle having the above described structure, the check valve allows the circulation of the drink with the compression of the body portion and/or the papilla portion being released. Accordingly, the drink such as milk in the nursing bottle can be introduced into the papilla portion side through the check valve. In this state, if the nipple is shrunken by chewing the body portion and/or the papilla portion, the check valve stops the circulation of the drink. Accordingly,

the drink introduced into the papilla portion side can be sent into the mouth through the dispensing hole in the papilla portion. Consequently, a baby can sequentially take the drink contained in the nursing bottle by repeatedly chewing the body portion and/or the papilla portion in the nipple.

When the above described check valve comprises a diaphragm for partitioning the inside of the body portion and a slit formed in the diaphragm, the structure of the check valve can be simplified. In addition, when the above diaphragm has a spherical shape, the check valve has desired resistance of pressure. Furthermore, when flat sidewalls opposed to each other are formed in the papilla portion and/or the body portion and the slit is formed in parallel with the above flat sidewalls, the direction of the nipple in a case where the baby is made hold the nipple in its mouth can be easily identified. In particular, when the above flat sidewalls are formed in the body portion, the baby can easily chew the body portion.

When the nipple comprises an outer member and an inner member removably fitted to the inside of the outer member and the check valve is formed in the inner member, the inside of the outer member on the papilla portion side can be easily and effectively cleaned by removing the inner member from the outer member.

When a spherical concave portion is formed on the inner periphery of the outer member and a spherical convex portion to be fitted to the concave portion is formed on the outer periphery of the inner member, the inner member can be easily prevented from coming off the outer member.

The advantages of the present invention will become more apparent from the following description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a cross sectional view illustrating a nipple for a nursing bottle according to an embodiment of the present invention;

Fig. 2 is a cross sectional view taken along a line II-II shown in Fig. 1;

Fig. 3 is a cross sectional view showing a state where a slit in a check valve is closed;

Fig. 4 is a cross sectional view showing another example of a slit;

Fig. 5 is a cross sectional view showing main portions of a nipple according to another embodiment;

Fig. 6A is a cross sectional view illustrating a nipple according to still another embodiment;

Fig. 6B is a top cross sectional view taken along a line VI - VI shown in Fig. 6A;

Fig. 7 is a cross sectional view showing an embodiment in which a nipple comprises an outer member and an inner member;

Fig. 8 is an exploded cross sectional view showing the embodiment shown in Fig. 7;

Fig. 9A is a cross sectional view illustrating a nipple according to another embodiment;

Fig. 9B is a cross sectional view taken along a line IX - IX shown in Fig. 9A;

Fig. 10A is a cross sectional view illustrating a nipple according to still another embodiment;

Fig. 10B is a top cross sectional view taken along a line X - X shonw in Fig. 10A;

Fig. 11 and 12 are cross sectional views illustrating a nipple according to a further embodiment; and

Fig. 13 is a cross sectional view showing an example of a conventional nipple.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will be described in detail with reference to the accompanying drawings showing preferred embodiments of the present invention.

Fig. 1 is a cross sectional view illustrating a nipple A for a nursing bottle according to the present invention. In the above nipple A, a hollow hemispherical papilla portion 1 and a flange-shaped connecting portion 3 connected to a neck portion B1 of a nursing bottle B are continuously connected to each other smoothly through a tapered tube-shaped body portion 2. A dispensing hole 11 for sending a drink such as artificial milk into the mouth of a baby from the inside of the nipple A is formed at the top of the above papilla portion 1.

The above described nipple A is manufactured by molding a rubber material such as isoprene rubber, silicone rubber or polyurethane rubber in a predetermined shape by injection molding, blow molding, dip molding or the like.

The papilla portion side A1 and the connecting portion side A2 inside of the above described nipple A are partitioned by a check valve 5 provided in a halfway portion of the body portion 2. This check valve 5 is provided with a slit 52 having a length in the longitudinal direction of approximately 0.5 to 5 mm in the center of a circular diaphragm 51. This slit 52 comprises two circular arc surfaces 52a opposed to each other and gradually narrows to both ends thereof. When the periphery of the above check valve 5 is compressed in the direction perpendicularly intersecting the longitudinal direction of the slit 52 (the direction represented by arrows X in Fig. 2), the slit 52 is closed (see Fig. 3). When the above described compression is released, the slit 52 is opened. Consequently, the

drink is introduced into the papilla portion side A1 from the connecting portion side A2.

When the baby keeps the nipple A in it's mouth, the baby instinctively acts chewing type muscle action. Accordingly, the check valve 5 is closed by a chewing type muscle action and at the same time, the papilla portion 1 is shrunken. Consequently, the drink introduced into the papilla portion 1 is sent into the mouth of the baby through the dispensing hole 11. When the compression of the papilla portion side A1 in the nipple A is released, the papilla portion side A1 is restored to its original shape by an elastic restoring force and correspondingly, the slit 52 in the check valve 5 is opened. Consequently, the drink is introduced again into the papilla portion side A1 from the connecting portion side A2. Therefore, the baby can take the drink by the chewing type muscle action. It is desirable that the dispensing hole 11 in the above papilla portion 1 is made small such that the drink in the nipple A is not easily sent into the mouth of the baby by a sucking operation of the baby. This can force the baby to take the drink by not the sucking operation but the chewing type muscle action. The dispensing hole 11 can be formed in the same shape as that in the conventional example, such as a cross shape, a Y shape or a so-called super crosscut shape, in addition to a circular shape.

The nipple A is connected to the nursing bottle B by interposing the connecting portion 3 between a cap C and the neck portion B1 of the nursing bottle B (see Fig. 1).

The slit 52 in the check valve 5 may have a crooked shape as shown in Fig. 4. Briefly stated, the slit 52 may have such a shape that the drink can be introduced into the papilla portion side A1 from the connecting portion side A2 in a state where the nursing bottle B is inverted or in a case where the papilla portion side A1 compressed is restored to its original shape and regulating the circulation of the drink by compressing the papilla portion side A1. In addition, an opening of the slit 52 may be narrowed such that the slit 52 is closed by a slight shrinkage of the papilla portion 1 caused when the baby sucks the nipple A. Also in this case, the baby can be forced to take the drink by the chewing type muscle action. The wall thickness W of the check valve 5 is generally set to approximately 0.5 to 5 mm.

The check valve 5 may be arranged in any position provided that the slit 52 can be opened or closed following the operation of chewing a portion, close to the papilla portion 1, of the body portion 2 and/or the papilla portion 1. In addition, the whole shape of the nipple A may be caused to have predetermined directionality such that the nipple A can fit the mouth of the baby, as shown in Fig. 5.

On the other hand, the wall thickness of the nipple A may be uniform throughout. However, it is desirable that right and left portions in Fig. 2 are thinner than upper and lower portions because the slit 52 in the check valve 5 is easily closed.

Fig. 6 is a cross sectional view illustrating a nipple for a nursing bottle according to another embodiment. The present embodiment is the same as the embodiment shown in Fig. 1 except for the shape in cross section of the papilla portion side A1 in a nipple A. In the present embodiment, flat sidewalls 21 opposed to each other are formed in a part of a body portion 2 and/or a papilla portion 1. In addition, a slit 52 is formed in parallel with the above flat sidewalls 21. According to the present embodiment, the direction of the nipple A in a case where a baby is made hold the nipple A in its mouth can be easily identified. More specifically, the slit 52 can be pointed in a suitable direction by only making the baby hold the nipple A in its mouth such that the above flat sidewalls 21 are parallel to the gums of the baby. Furthermore, the above sidewalls 21 fit the mouth of the baby. Accordingly, the baby can easily chew the nipple A.

Fig. 7 is a cross sectional view illustrating a nipple A according to still another embodiment. The present embodiment is the same as the embodiment shown in Fig. 1 except that a check valve 5 is provided such that it is removable from the inside of a nipple A. More specifically, this nipple A comprises an outer member O having a papilla portion 1, a body portion 2 and a connecting portion 3 and an inner member I removably fitted to the inside of the outer member O. The above check valve 5 is formed at the end of the inner member I. The above inner member I is brought into contact with the end face of the connecting portion 3 and an inner peripheral surface of the body portion 2. This inner member I is fitted to the inside of the outer member O using a fixture conforming to its inner periphery (see Fig. 8). According to the present embodiment, the check valve 5, along with the inner member I, can be removed from the outer member O. Accordingly, the inside of the outer member O on the papilla portion side A1 can be easily and effectively cleaned.

Meanwhile, the above outer member O and inner member I are formed of rubber materials similar to a material of the above nipple A, such as isoprene rubber, silicone rubber or polyurethane rubber. Furthermore, it is desirable that the inner member I is made softer than the outer member O because the inner member I is easily brought into contact with the outer member O.

Fig. 9 shows a case where a nipple A of such a type that flat sidewalls 21 opposed to each other are formed in a part of a body portion 2 and a

papilla portion 1 comprises an outer member O and an inner member I. In the present embodiment, a stopper 7 prevents the inner member I from coming off the outer member O. The above stopper 7 is removably attached to the outer member O by interposing an inner peripheral portion of a connecting portion 3 in the outer member O between a flange portion 71 provided along the connecting portion 3 and an annular projection 72 formed on the outer periphery of a cylindrical portion 73.

In a nipple A shown in Fig. 10, a spherical concave portion 22 is formed on the inner periphery of an outer member O, and a spherical convex portion 23 to be fitted to the above concave portion 22 is formed on the outer periphery of an inner member I. According to the preset embodiment, fitting of the above concave portion 22 to the above convex portion 23 can prevent the inner member I from coming off the outer member O. Consequently, the stopper 7 shown in Fig. 9 is not required.

In any of the above described embodiments, the papilla portion 1 and the body portion 2 may assume shapes in cross section which are analogous to the shape of the slit 52 in the check valve 5 (see Fig. 11). Also in this case, the direction of the nipple A in a case where the baby is made hold the nipple A in its mouth can be easily identified.

Furthermore, in the embodiment shown in Fig. 1, the diaphragm 51 in the check valve 5 may have a spherical shape (see Fig. 12). In this case, the resistance to pressure of the check valve 5 can be increased.

As described in the foregoing, in the nipple for a nursing bottle according to the present invention, a baby can take a drink contained in a nursing bottle by not a sucking operation but a chewing type muscle action. Accordingly, the pattern of chewing movement of the masticatory system of the baby will be prevented from being replaced by the sucking operation. Consequently, the development of the masticatory system is facilitated, and the function of musticatory system can be ensured. Therefore, the nipple for a nursing bottle proposed in the present invention can prevent dental problems, such as temporomandibular joint disorder, malocclusion, periodontitis and other dental diseases.

Claims

1. A nipple for a nursing bottle, comprising:
a connecting portion connected to a neck portion of the nursing bottle;
a hollow body portion which is contiguous to the connecting portion;
a papilla portion which is contiguous to the body portion;
a dispensing hole through which drinks are sended out from the papilla portion; and
a check valve provided inside of the body portion for stopping the circulation of the drinks by compressing the body portion and/or the papilla portion, and allow the circulation of the drink with the compression of the body portion and/or the papilla portion being released.

2. The nipple for a nursing bottle according to claim 1, wherein the check valve comprises a diaphragm for partitioning the inside of the body portion and a slit formed in the diaphragm.

3. The nipple for a nursing bottle according to claim 2, wherein the diaphragm has a spherical shape.

4. The nipple for a nursing bottle according to claim 2, wherein flat sidewalls opposed to each other are formed in the papilla portion and/or the body portion, and the slit is formed in parallel with said flat sidewalls.

5. The nipple for a nursing bottle according to claim 1, wherein the nipple comprises an outer member and an inner member removably fitted to the inside of the outer member, and the check valve is formed in the inner member.

6. The nipple for a nursing bottle according to claim 5, wherein a spherical concave portion is formed on the inner periphery of the outer member, and a spherical convex portion to be fitted to said concave portion is formed on the outer periphery of the inner member.

Fig. 1

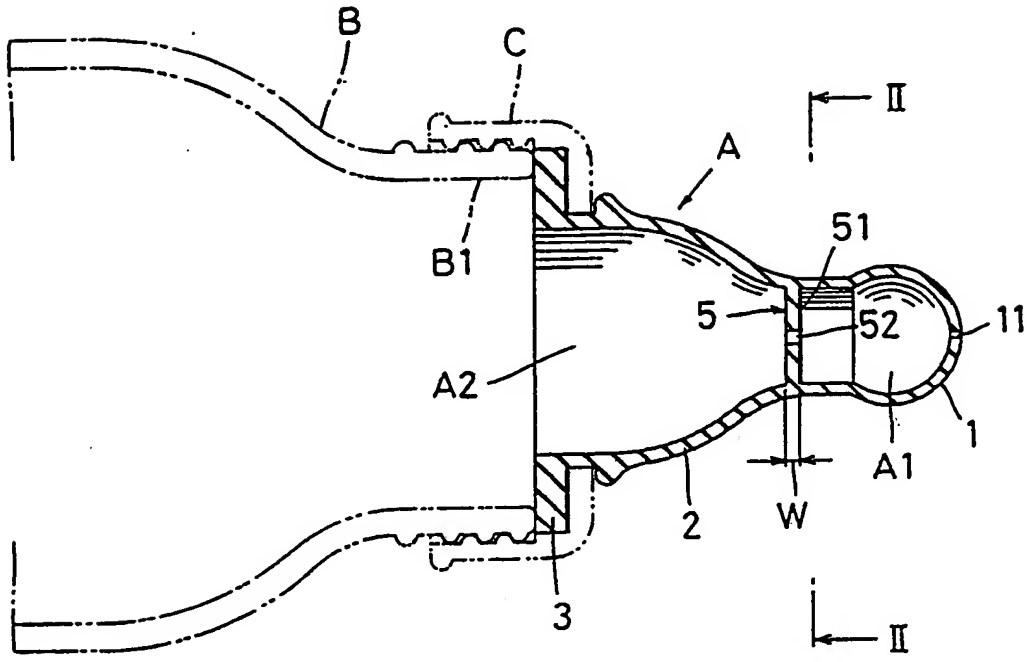

Fig. 2

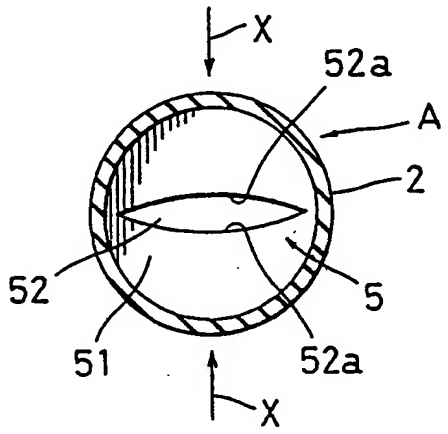

Fig.3

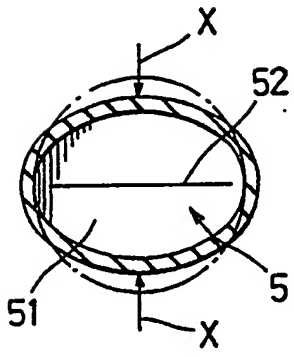

Fig.4

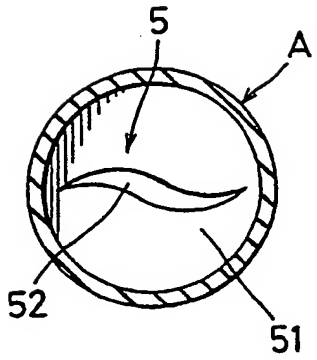

Fig.5

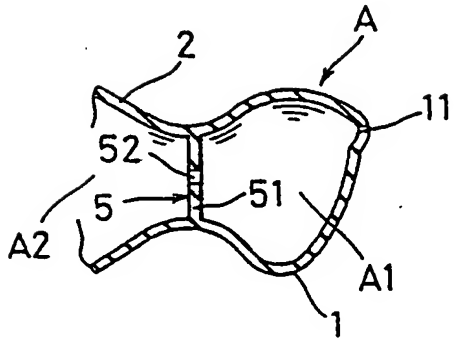

Fig.6 (A)

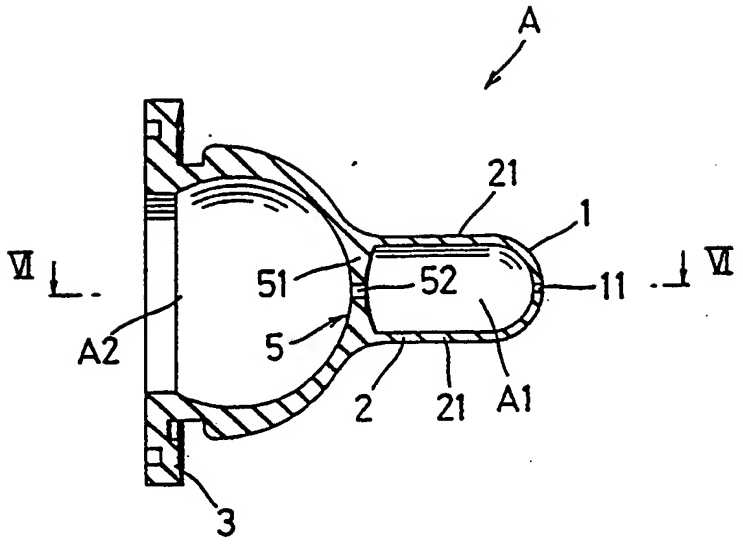

Fig.6 (B)

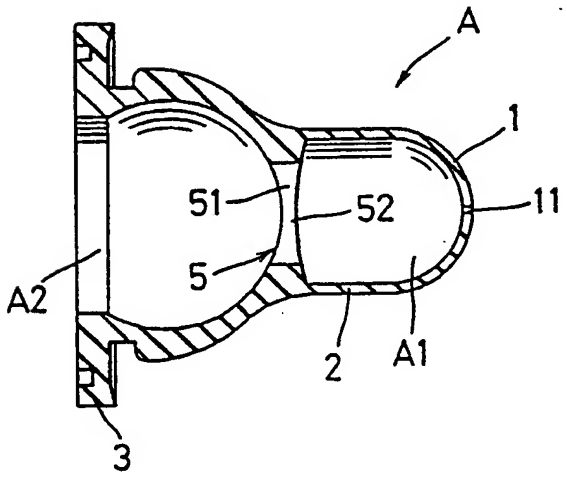

Fig. 7

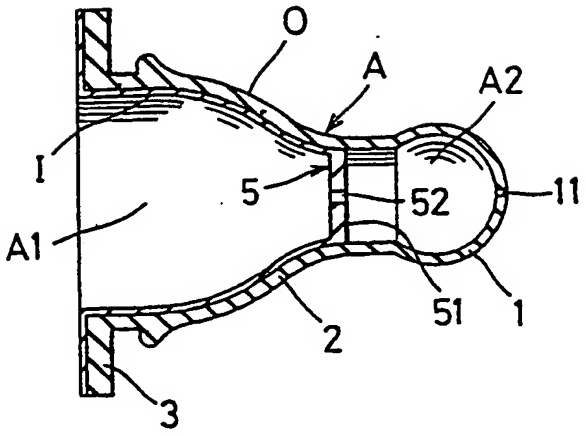

Fig. 8

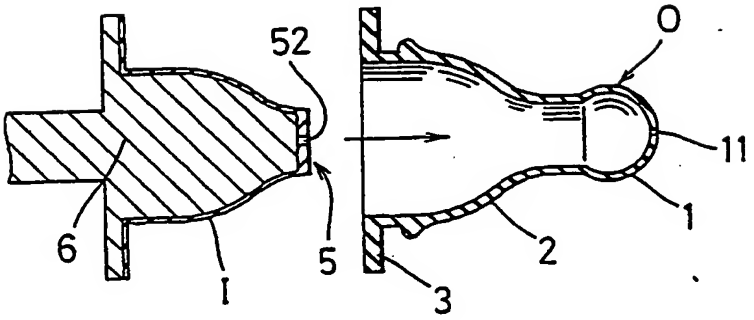

Fig.9 (A)

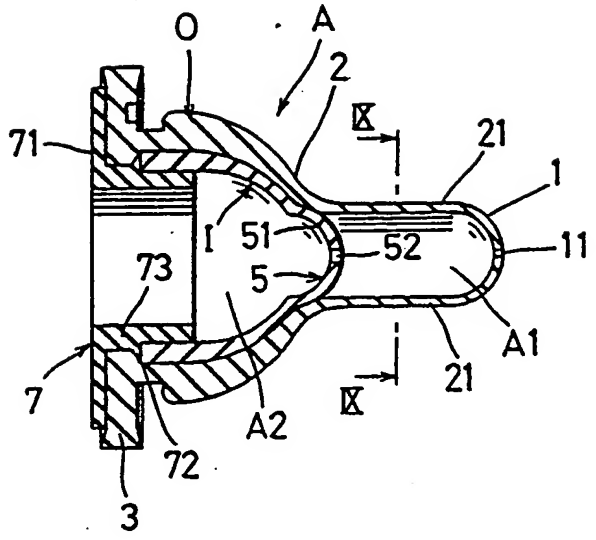

Fig.9 (B)

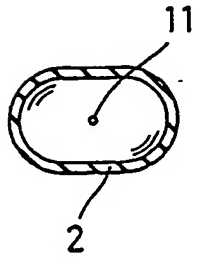

Fig.10 (A)

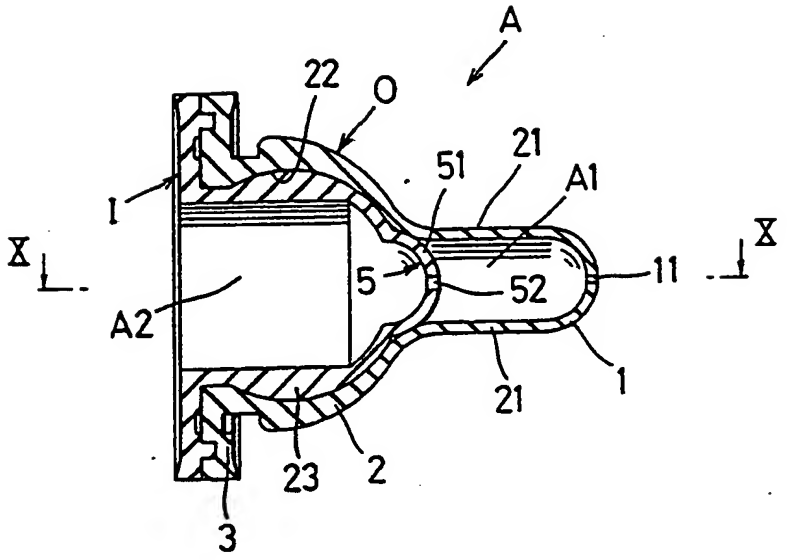

Fig.10 (B)

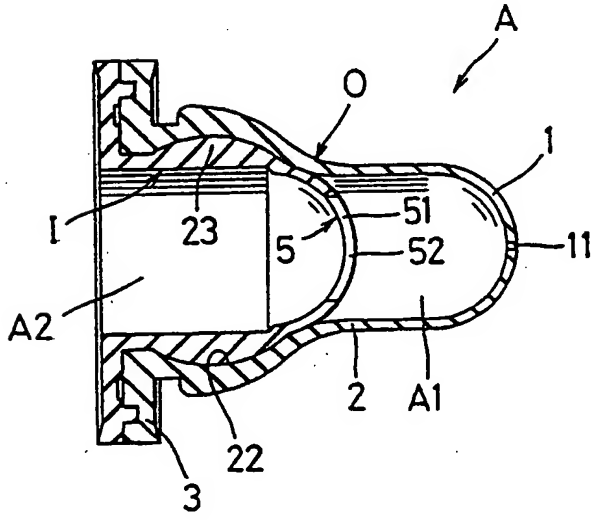

Fig.11

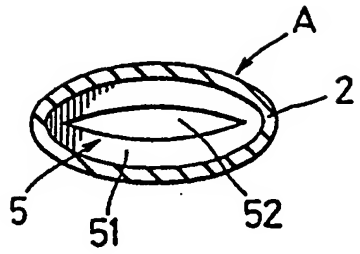

Fig.12

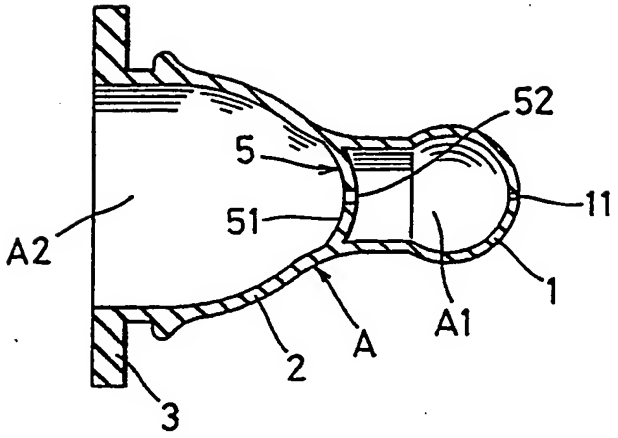

Fig.13